Explorer D210

Installation and Operation Manual

NORTHSTAR

www.northstarnav.com

IMPORTANT SAFETY INFORMATION Please read carefully before installation and use.	
DANGER	This is the safety alert symbol. It is used to alert you to potential personal injury hazards, Obey all safety messages that follow this symbol to avoid possible injury or death.
⚠WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
⚠CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
CAUTION	CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

DISCLAIMER: It is the owner's sole responsibility to install and use the instrument and transducers in a manner that will not cause accidents, personal injury or property damage. The user of this product is solely responsible for observing safe boating practices.

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Governing Language: This statement, any instruction manuals, user guides and other information relating to the product (Documentation) may be translated to, or has been translated from, another language (Translation). In the event of any conflict between any Translation of the Documentation, the English language version of the Documentation will be the official version of the Documentation.

This manual represents the Explorer D210 as at the time of printing. Brunswick New Technologies Inc. and its subsidiaries and affiliates reserve the right to make changes to specifications without notice.

FCC Statement

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a normal installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an output on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.
- A shielded cable must be used when connecting a peripheral to the serial ports.

Contents

1 Operation

Whenever power is applied the depth sounder is active and water depth is displayed. If the sonar signal does not show a bottom the display will indicate "- -". This can occur if the water is aerated or the maximum depth is exceeded.

Note: *The maximum depth decreases as boat speed increases.*

Alarms

Two types of alarms can be set; the Deep Alarm and the Shallow Alarm. The Deep Alarm can be set as high as 184 metres (605 feet) while the Shallow Alarm can be set as low as 0.3 metre (1 foot).

Whenever the water depth is greater than the Deep Alarm setting and the alarm is enabled an alarm will sound. The alarm repeats two short beeps and alternates DAL and the water depth on the display.

Whenever the water depth is less than the Shallow Alarm setting and the alarm is enabled an alarm will sound. The alarm repeats a single long beep and alternates SAL and the water depth on the display.

Alarms On/Off

Alarm settings are saved in memory.

To turn the alarm on, press ∧ (ON). An arrow on the lower right corner of the display will show (next to the Alarm Bell), to indicate that the alarms are on.

To turn the alarms off, press ∨ (OFF). The arrow in the lower right corner will extinguish.

Note: *The arrow will flash if alarms are turned ON but the shallow alarm is individually set to OFF. See next section.*

Shallow Alarm

To set the shallow alarm:

1. Press ∧ for three seconds. The display will show:

Press for 3 Seconds

2. After a few seconds the display will indicate the current Shallow Alarm depth setting.

3. Use ∧ and ∨ to change the value. If either key is held depressed for more than one second the reading will increase or decrease rapidly.

4. When the alarm is set, exit by pressing both ∧ and ∨ simultaneously. Alternatively, if no keys are pressed for a period of 5 seconds the normal depth display will resume.

Press simultaneously to exit

Note: *If the reading is decreased to below 1.5 feet (or equivalent) the display will show OFF and the alarm will be disabled. The alarm can also be disabled by pressing both ∧ and ∨ for 5 seconds. The word OFF will be displayed but the alarm depth will be retained for future use.*

Deep Alarm

To set the deep alarm:

1. Press ∨ for three seconds. The display will show:

Press for 3 Seconds

2. After two seconds the display will indicate the current Deep Alarm depth setting.

3. Use ∧ and ∨ to change the value. If either key is held depressed for more than one second the reading will increase or decrease rapidly.

4. When the alarm is set, exit by pressing both ∧ and ∨ simultaneously. Alternatively, if no keys are pressed for a period of 5 seconds the normal depth display will resume.

Press simultaneously to exit

Note: *If the reading is increased one step above 600 feet (or equivalent) the display will show OFF and the alarm will be disabled. The alarm can also be disabled by pressing both ∧ and ∨ for 5 seconds. The word OFF will be displayed but the alarm depth will be retained for future use.*

2 Instrument Setup

Keel/Surface Offset

An offset may be automatically added to or subtracted from the depth reading to compensate for the location of the transducer. This allows the instrument to indicate the water depth relative to the bottom of the keel or the surface of the water.

To set the keel/surface offset:

1. Apply power while holding down ∧.

Hold down during power up

2. When the unit is on, release ∧. The display will indicate if the current offset is keel offset or waterline offset:

Hull Offset (Depth below the keel)

Surface Offset (Depth below the surface)

3. After 5 seconds the display will indicate the current offset.

Note: *A negative offset is used to display depth below the keel and a positive offset is used to display depth below the surface.*

4. Use ∧ and ∨ to change the value. If either key is held depressed for more than one second the reading will increase or decrease rapidly.
5. The offset can be programmed in 0.1 unit steps from -9.9 to 9.9 feet (or equivalent). When programmed for a negative offset, '-' will be indicated on the left hand side of the display.
6. To display depth below the keel enter the vertical distance between the bottom of the keel and the depth transducer as a negative value.
7. To display depth below surface enter the vertical distance from the waterline to the depth transducer as a positive number (no negative sign).
8. To exit this mode, press and hold both ∧ and ∨ simultaneously. Alternatively, if no keys are pressed for a period of 5 seconds normal depth display will resume.

Press simultaneously

The display will now indicate the current water depth.

Transducer Setting

A Transducer Setting is provided to allow the Explorer D210 to be used with different transducer types. The default setting (= 0.0) is used for most transducers.

Some transducers 'ring' after the sonar transmit pulse (just like hitting a bell). This ringing can be interpreted as an echo from a shallow bottom. The setting is used to increase the required level that shallow echoes must meet before they will be displayed.

If the Explorer D210 gives repeated false readings of 1.5 to 3 feet depth while in deep water the transducer setting should be increased. Adjust it upward by 0.5 at a time and re test. The range of values is -0.9 to +2.5. If the value is set too high it could cause erratic readings in shallow water.

Changing the Transducer Setting:

1. Apply power while holding down ∧. The display will show either **HOF** or **SOF** for 7 seconds. Continue to hold the key down.
2. The display will show **tdr**.

3. Release the key.
4. After 2 seconds the display will show the Transducer Setting value eg 0.0.
5. Use ∧ and ∨ to change the value.
6. To exit this mode, press and hold both ∧ and ∨ simultaneously.

Units of Measure

To select the displayed unit

1. Apply power while holding down ∨.

Hold down during power up

2. When the unit is on, release ∨. The display will indicate the current display unit with:

Feet *Metres*

Fathoms

3. Use ∧ and ∨ to change the value.
4. To exit this mode, press and hold both ∧ and ∨ simultaneously. Alternatively, if no keys are pressed for a period of 5 seconds normal depth display will resume.

Press simultaneously

The display will now indicate the current water depth in the selected display unit.

3 Dual Station Operation

Multiple Explorer 210 instruments can be installed on a single vessel. These instruments can be connected together and configured to operate in a dual station configuration. One instrument is designated as a master and all other instruments, connected to it, are configured as slaves. The master device is connected to the depth transducer and determines the water depth. This information is then displayed on all slave devices connected to it. Slave devices do not have transducers connected to them.

The slave devices can be configured to operate as fully functional NMEA repeaters where they display water depth, as displayed on the master device, and share common alarm settings and keel offset values. In this mode the common alarm settings can be changed or activated/deactivated from either the master or slave devices.

Alternatively, the slaves can be configured to operate as independent slaves. In this mode the slaves display the water depth received from the master, but have independent alarm settings and keel offset values.

Note: *The instrument designated as the master device is the only instrument connected to the depth transducer.*

Master/Slave Selection

To select the master/slave mode of operation:

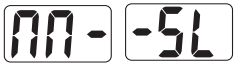
1. Apply power while holding down ⋁.

Hold down during power up

2. When the unit is on. The display will indicate the current display unit:

example

3. Continue to hold ⋁ until the display indicates the current master/slave selection.



Master *Slave*

4. Use ⋀ and ⋁ to change the selection.
5. To exit this mode, press and hold both ⋀ and ⋁ simultaneously. Alternatively, if no keys are pressed for a period of 5 seconds normal depth display will resume.

Press simultaneously

Note: *If the data link is inadvertently broken then the display will alternate between -- and -SL.*

Linked or Separate Selection

By default a dual station pair of Explorer D210 instruments automatically keep the following settings the same in both instruments:

Alarms On/Off

Alarm Values (Deep and Shallow)

Keel Offset (see note)

Units of measure (see note)

Example: Switching an alarm off on the slave instrument will also switch the alarm off on the master instrument. The reverse also applies, alarms changed on the master will be automatically changed in the slave instrument.

Note: *The keel offset and units of measure should only be changed on the Master instrument.*

If independent settings are required the link feature can be disabled.

To enable or disable the linked mode:

1. Apply power while holding down ⋁.

Hold down during power up

2. When the unit is on. The display will first indicate the current display unit:

Example

3. Continue to hold ⋁. The display will indicate the current master/slave selection.

Slave

4. Continue to hold ⋁ until the display indicates the current linked/separate selection.

Linked *Separate*

5. Use ⋀ and ⋁ to change the selection.
6. To exit this mode, press and hold both ⋀ and ⋁ simultaneously. Alternatively, if no keys are pressed for a period of 5 seconds normal depth display will commence.

Press simultaneously

Note: *This setup procedure applies to the master device and all slave devices. For separate operation all devices, including the master, must be set to Separate mode. Also, for linked operation all devices, including the master, must be set to Linked mode.*

4 Maintenance

Your depth sounder is designed for years of trouble free operation assuming proper installation and care are provided. Following the operation and installation guidelines in this manual should ensure optimum performance of the instrument. In the unlikely event that the instrument shall fail to perform or shall need servicing, contact the dealer whom you purchased your Explorer D210 from.

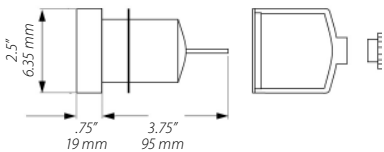
5 Installation

Instrument Installation

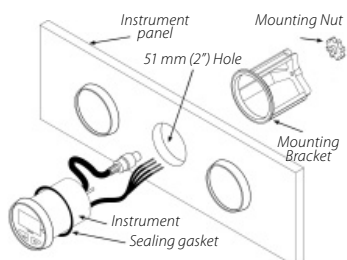
The instrument can be easily installed in different types of instrument panels.

1. Select a suitable location for the instrument. When selecting the location for mounting, the following are recommended:
   - Controls of the instrument must be accessible to the user.
   - Electrical connections must be routed to the boat system as directly as possible, minimising the length of cable where practical.
   - Location should provide as much protection from the elements as possible.
   - The panel for mounting the instrument should be 3 mm to 19 mm (1/8 to 3/4 inch) thick.
   - The space behind the instrument panel must have a depth of at least 95 mm (3.75 inches).
2. Drill a 51 mm (2-inch hole) on the instrument panel in the selected location.
3. With the mounting bracket removed, insert the instrument into the hole until the back of the face plate is flush with the outside mounting wall.
4. Slide the bracket over the body of the instrument. Note: Orient the bracket in such a manner that it does not cover the buzzer.
5. Tighten the mounting nut until the bracket is secure.
6. Connect the power cord at the back of the instrument to a 12 V power supply which is active whenever the ignition switch is on.

   The red lead should be connected to the positive terminal of the power supply via a 1 amp fuse or a 1 amp circuit breaker. The black lead should be connected to the negative terminal.



7. Obtain the power from a 12 V source as directly as possible. Avoid power circuits which share loads with ignition, alternators, radio transmitters, etc. Excessive electrical noise associated with such devices may prevent the instrument from operating properly.
8. Connect the RCA phono plug on the transducer cable to the instrument. Extension cables are available from your Northstar dealer if the transducer cable is too short.



6 Wiring

- ***Red (+) Terminal***
- ***Black (-) Terminal***
- ***Orange External Buzzer***

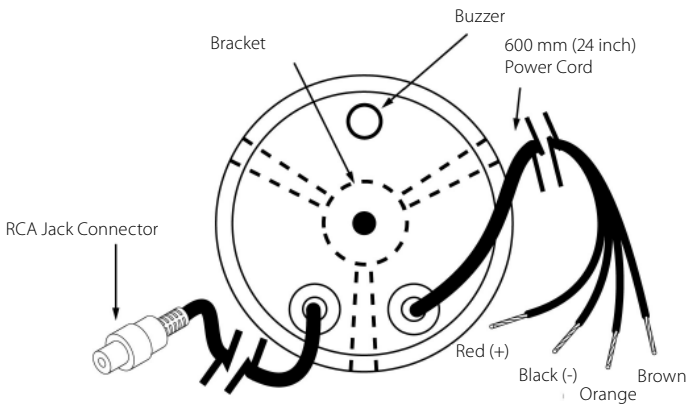
  Use for optional external buzzer (use red (+) terminal to complete circuit). If unused then tape to avoid shorting.

- ***Brown Data input/output***

  Your Explorer D210 can be used as a repeater for another DPT or DBT NEMA depth sounder. If unused then tape to avoid shorting.

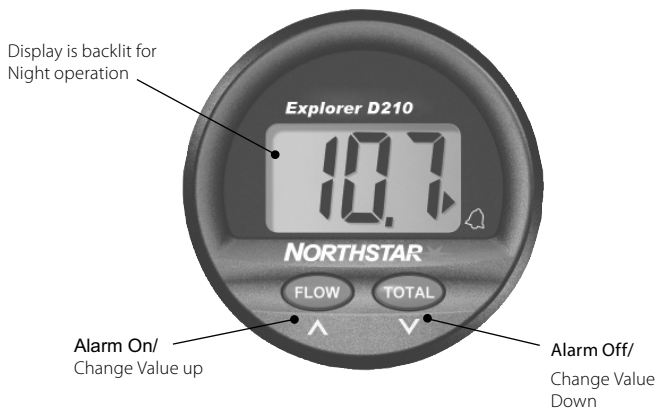
⚠WARNING

If unsure about wiring contact your nearest Northstar dealer.



Appendix A - Specifications

- **Size**
  Mount: 51 mm (2") diameter hole
  Depth behind face plate: 95 mm (3.75") max.
  Display: 3-character LCD
- **Color**
  Black bezel.
- **Backlighting**
  Red colored diffused lighting for display.
- **Water Integrity**
  Front will withstand direct water spray.
- **Depth/Alarm Range**
  2.0-600 feet
  0.6-184 metres
  0.3-100 fathoms
  (to 9.9 in tenths)
- **Sensitivity**
  Better than 0.05 mV RMS at 200 feet.
- **Transmit Power**
  36 W RMS nominal at 13.6 V DC.
- **Transducer**
  200 kHz 1900 pF/600 W parallel.
- **Display Updating**
  1 second.
- **Operating Voltage**
  9.5 V DC to 16.5 V DC.
- **Operating Temperature**
  0°C to 50°C (32°F to 122°F).
- **Current Drain**
  150 mA max, including internal buzzer.
- **Data Input/Output**
  Single wire data output/Input.
  Dual station mode outputs NMEA sentences. Dual station accepts NMEA sentences. In the linked mode a dual station pair also transfer function settings eg. Alarm on/off.
- **NMEA Output**
  DPT.
- **NMEA Input**
  DPT and DBT.
- **External Buzzer Output**
  12 V DC Buzzer, 100 mA max.
- **RF Interference**
  <6 dB quieting on any marine radio channel (with 3 dB gain antenna) within one meter of the instrument. Complies with CE EMC standards EN50081-1 and EN50082-1.



Appendix B - Troubleshooting

No display:

1. Check DC power connections and DC polarity with voltmeter.
2. Check fuse.

No depth reading (--) at all depths:

1. Check transducer for growth or multiple coats of paint.
2. Check the transducer cable for cuts and sharp bends.
3. Check that the transducer connection behind the Explorer D210 is firm and free of corrosion.

Erratic readings while moored:

1. Check transducer for growth or multiple coats of paint.

Erratic readings while moving:

1. Cavitation (air) under the face of the transducer. Review installation and reinstall if necessary.

Erratic readings only while engine is running:

1. Re-route power and transducer cables away from engine, ignition wires and battery cables.
2. Add feed-through filter capacitor on the positive terminal of the ignition coil.
3. Add an alternator whine filter to alternator.
4. Replace spark plug wire with resistive type.

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